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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
VANCHY JR, MICHAEL J	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,342	MOLGAARD ET AL.	
	Examiner	Art Unit	
	Michael Vanchy Jr.	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/16/2006, 11/01/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 16 is objected to because of the following informalities: The examiner believes the applicant meant the word "performance" instead of "peilormance." Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Tassakos et al., US 6,618,496 B1.

Regarding claim 1:

An electronic system for determining three-dimensional positions within a measuring volume, comprising at least one electronic camera for recording of at least two images with different viewing angles of the measuring volume, an electronic processor that is adapted for real-time processing of the at least two images for determination of three-dimensional positions in the measuring volume of selected objects in the images (Fig. 2, Abstract, and col. 4, lines 31-47).

Regarding claim 2:

An electronic system according to claim 1, comprising one electronic camera for recording images of the measuring volume (Fig. 2), and an optical system positioned in front of the camera for interaction with light from the measuring volume in such a way that the at least two images with different viewing angles of the measuring volume are formed in the camera (Fig. 2, item "14" and col. 9, lines 41-64).

Regarding claim 3:

An electronic system according to claim 1, wherein the processor is further adapted for recognizing predetermined objects (col. 10, lines 12-16, The predetermined objects are the "glass ceramic cookers.").

Regarding claim 22:

An electronic system according to claim 1, wherein the optical system is symmetrical about a symmetry plane and the optical axis of the camera substantially coincides with the symmetry plane (col. 10, line 66 to col. 11, line 5).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos et al., US 6,618, 496 B1 as applied to claim 1 above, and further in view of Examiner's Official Notice.

Regarding claim 9, the examiner takes official notice that it is notoriously well known in the art for a system to recognize exposed parts of a human body by recognition of human skin.

Regarding claim 23, the examiner takes into account that two systems can be created from the one system displayed in Fig. 2 by adding more cameras. Tassakos et al., uses "at least" two multiple image sensors and therefor can easily adopt having overlapping measurement volumes even if it is not specifically stated.

6. Claims 4-8, 10-21, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos et al., US 6,618, 496 B1 and further in view of Pryor, US 2002/0036617 A1.

Tassakos et al. (Tassakos) teaches an electronic system for determining three-dimensional positions within a measuring volume, however, is silent on recognizing human body parts. Pryor, however, teaches an electronic system for determining three-dimensional positions including human body parts. Pryor's system is silent on using a "measuring volume," however, it is obvious to one of ordinary skill in the art that since multiple cameras or sensors can be used, a "measuring volume" is created. Thus, it would be obvious to one of ordinary skill in the art, to modify an electronic system for

determining three-dimensional positions within a measuring volume including human body parts, such as Pryor's invention.

Pryor teaches:

Regarding claim 4:
An electronic system according to claim 3, wherein the processor is further adapted for recognizing body parts of a human body ([0241]).

Regarding claim 5:
An electronic system according to claim 4, wherein three-dimensional positions of body parts are used for computer control ([0241]).

Regarding claim 6:
An electronic system according to claim 4, wherein three-dimensional movements of body parts are used for computer control ([0241]).

Regarding claim 7:
An electronic system according to claim 1, wherein the processor is further adapted for recognizing colour patches worn by a human object in the measuring volume ([0040], [0047], and [0743]).

Regarding claim 8:
An electronic system according to claim 1, wherein the processor is further adapted for recognizing retro-reflective objects worn by a human object in the measuring volume ([0040] and [0113]).

Regarding claim 10:

An electronic system according to claim 1, wherein the processor is further adapted for recognizing colors by table lookup, the table entries being color values of a color space, such as RGB-values (Fig. 1e and [0187]).

Regarding claim 11:

An electronic system according to claim 4, wherein the processor is further adapted for determining three-dimensional positions of body parts in relation to each other (Abstract).

Regarding claim 12:

An electronic system according to claim 1, wherein the processor is further adapted for determining human body joint angles ([0122] and [0669]).

Regarding claim 13:

An electronic system according to claim 4, wherein the processor is further adapted for determining performance parameters related to specific body positions ([0379]).

Regarding claim 14:

An electronic system according to claim 13, wherein the processor is further adapted for determining performance parameters of specific human exercises ([0379]).

Regarding claim 15:

An electronic system according to claim 14, wherein at least some of the performance parameters are physiotherapeutic parameters ([0579]).

Regarding claim 16:

An electronic system according to claim 13, wherein the processor is further adapted for providing a specific output in response to the determined peilormance parameters ([0378] and [0379]).

Regarding claim 17:

An electronic system according to claim 16, further comprising a display for displaying a visual part of the output ([0551]).

Regarding claim 18:

An electronic system according to claim 15, further comprising a sound transducer for emitting a sound part of the output ([0378] and [0551]).

Regarding claim 19:

An electronic system according to claim 1, wherein the optical system comprises mirrors for re-directing light from the measuring volume towards the camera ([0733]).

Regarding claim 20:

An electronic system according to claim 1, wherein the optical system comprises prisms for re-directing light from the measuring volume towards the camera ([0743]).

Regarding claim 21:

An electronic system according to claim 1, wherein the optical system comprises diffractive optical elements for re-directing light from the measuring volume towards the camera ([0738] and [0743]).

Regarding claim 30:

A system for assessment of movement skills in a three-dimensional space, comprising an electronic system according to claim 1 ([0145]).

Regarding claim 31:

A computer interface utilizing three-dimensional movements, comprising an electronic system according to claim 1 (Fig. 9c).

Regarding claim 32:

An interface to a computer game utilizing three-dimensional movements, comprising an electronic system according to claim 1 (Fig. 5 and [0079]).

Regarding claim 33:

A system for motion capture of three-dimensional movements, comprising an electronic system according to claim 1 (Fig. 26 and [0106]).

7. Claims 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tassakos et al., US 6,618, 496 B1 and further in view of Deering, US 6,940,529 B2.

Tassakos et al. (Tassakos) teaches an electronic system for determining three-dimensional positions within a measuring volume, however, is silent on using calibration means. Pryor, uses calibration means ([0734]) but is silent on specific calibration pixels. Deering uses a sample-to-pixel calculation to project one or more patterns for display on a screen. It would be clear to one of ordinary skill in the art at the time of the invention to include the projection means for calibrating a camera, since calibrating is well known within the art and increases the accuracy of the device.

Deering teaches:

Regarding claim 25:

A method according to claim 24, wherein the calibration image is generated by a projector with at least ten times less geometrical distortion than the system (col. 3, line 60 to col. 4, line 4, The examiner takes into account that taking away all distortion in an image creates at least ten times less distortion.).

Regarding claim 24:

A method of calibrating a system according to claim 1, comprising the steps of positioning of a screen in the measuring volume of the system, projecting a calibration

image with known geometrical features onto the screen, for specific calibration image pixels, determining the corresponding two image pixels in the camera, and calculating the line of sight for substantially each pixel of the camera sensor (col. 47, line 66 to col. 48, line 13).

Regarding claim 26:

A method according to claim 24, wherein the calibration image is a black and white image (col. 54, lines 35-61).

Regarding claim 27:

A method according to claim 26, wherein the calibration image comprises one black section and one white section divided by a horizontal line (col. 54, lines 35-61).

Regarding claim 28:

A method according to claim 24, wherein the calibration image comprises one black section and one white section divided by a vertical line (col. 54, lines 35-61).

Regarding claim 29:

A method according to claim 24, wherein the step of projecting a calibration image comprises sequentially projecting a set of calibration images onto the screen (col. 50, lines 22-33 and col. 54, lines 35-61).

Examiner's Note

The referenced citations made in the rejection(s) above are intended to exemplify areas in the prior art document(s) in which the examiner believed are the most relevant to the claimed subject matter. However, it is incumbent upon the applicant to analyze the prior art document(s) in its/their entirety since other areas of the document(s) may

be relied upon at a later time to substantiate examiner's rationale of record. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Vanchy Jr. whose telephone number is (571) 270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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